

NOTE

CYPERUS DIANDRUS: ANOTHER NOVA SCOTIAN RARE
PLANT FROM A RARE LAKE TYPE

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On 17 August, 2000, when the lake water level had fallen to its lowest seasonal elevation (1.97 m below winter high water level), I discovered numerous (> 500) individuals of the annual *Cyperus diandrus* Torr. at the water's edge of Third Lake, Canaan, Yarmouth Co., Nova Scotia (Hill, Hill & Hill s.n., ACAD ECS015836). The plants were diminutive (2–3 cm tall), among the smallest on record (range: 2–45 cm; Fernald 1950). Other characteristically small plants [*Ranunculus reptans* L. and *Eleocharis acicularis* (L.) Roem. & Schult.] were associated with *C. diandrus* at the waterline and all were in fruit.

Cyperus diandrus has a G5 ranking. It occurs in 26 states of the U.S.A. and is considered rare in nine (NatureServe 2000). *Cyperus diandrus* had been known to occur from Ontario to Quebec, to central Maine, south to New Mexico and South Carolina (Scoggan 1985). The closest known populations to this Nova Scotian site are in New Brunswick. Early findings in New Brunswick by Fowler and Macoun (Scoggan 1985) were substantiated and the taxon is listed in *The Rare Vascular Plants of New Brunswick* as occurring at two locations (Hinds 1983). A 1998 listing for the taxon in Nova Scotia (Haines and Vining 1998) was in error (T. F. Vining, pers. comm.) but the current finding now remedies this.

Cyperus diandrus occurs in a variety of wetland habitats from tidal flats to pond shores. Its Nova Scotian locality, the shoreline of a large catchment area lake (67,000 ha; Third Lake catchment area) is itself a rare habitat type since, of Nova Scotia's approximately 2000 lakes, only a minority have watershed areas greater than 50,000 ha. These habitats are regional "hot spots" for rare Atlantic Coastal Plain plant species (Hill et al. 1998). It has been suggested that many rare species in these habitats are poor competitors and are locally abundant because the greater flooding in

large catchment area lakes maintains the low biomass conditions they require (Wisheu and Keddy 1994). *Cyperus diandrus*, although not a coastal plain species, occurs in the most flood-stressed part of this habitat: at the lowest shoreline position that has a terrestrial phase. The growing season at this position is the shortest available on the lakeshore. Annuals are not common in this habitat (Keddy and Wisheu 1989) and populations of annuals are especially vulnerable to between-year variation in water level; a high water year could prevent an annual from successfully establishing seedlings. *Cyperus diandrus* was discovered in 2000, which followed two low-water summers; April to August precipitation totals for 1999 and 1998 were 25% and 23% lower than average (1960–1999 data, Environment Canada, Yarmouth, Nova Scotia). This annual may be able to persist in a narrow zone, bounded at upper shore positions by increased competition in a higher biomass habitat and at lower shore positions by growing seasons that do not allow for seed production. Thus, the species appears to be one of the more vulnerable in this lakeshore community. Annual changes in its population should be monitored and an investigation of its reproductive biology should be undertaken. As a first step, it needs to be determined whether the species has formed a persistent seed bank that can sustain the population during periods of high water level (cf. Keddy and Reznicek 1982).

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